BIOLOGICAL EVALUATION REGARDING EPA'S APPROVAL OF ILLINOIS' WATER QUALITY STANDARDS

Total Dissolved Solids Site-Specific Water Quality Standard for the Lower Des Plaines River (35 Ill. Adm. Code Section 303.445) Adopted February 15, 2007[1]

DATE:

*****DRAFT***10.20.2008**

CONTENTS

1 This submission is also documented and all electronic files are maintained in the Region 5 Water Quality Standards Tracking System (WQSTS) as submission number: IL2008-239. The proposed rules are documented as submission number: IL2006-155.

EXECUTIVE SUMMARY

On May 29, 2008 the Illinois Environmental Protection Agency (Illinois EPA) submitted a site-specific water quality standard (WQS) for Total Dissolved Solids (TDS) for the Lower Des Plaines River to the United States Environmental Protection Agency (EPA) for approval. The proposed site-specific rulemaking was first filed with the Illinois Pollution Control Board (IPCB) by the ExxonMobil Oil Corporation (ExxonMobil) on February 7, 2006 for discharges of Total Dissolved Solids (TDS) from the ExxonMobil Joliet Refinery into the Lower Des Plaines River during the months of November through April in each year. This site-specific WQS revision was necessitated by a change in the ExxonMobil plant operations. ExxonMobil is seeking a site-specific standard for TDS for the Lower Des Plaines River from 1500 mg/L upstream of the I-55 bridge (This segment of the Des Plaines River is designated as Secondary Contact and Indigenous Aquatic Life) and 1000 mg/L downstream of the I-55 bridge to1686 mg/L from the point of discharge to the confluence with the Kankakee River during the months of November through April. The standards cannot be met under winter low flow conditions because of high upstream TDS loads from road salting runoff which in itself results in TDS levels above the current WQS. EPA has reviewed the submitted information and plans on approving this site-specific WQS.

Of the seven listed species found in Will County only the following three species are aquatic or aquatic-dependent and could potentially be affected by this water quality standards revision, namely, the Hine's emerald dragonfly, the Indiana bat and the Eastern prairie fringed orchid

The conclusion reached in this Biological Evaluation is that the site-specific TDS standard for the Lower Des Plaines River will have **no effect** on these listed species primarily because no listed species are found in the action area and the revised TDS standard is still within toxicity limits that would be protective of aquatic life given the conditions of the Lower Des Plaines River. In addition, no cumulative effects of this or known future standards revisions were determined. Further consultation with the FWS will therefore not be required for EPA's approval of this site-specific water quality standards revision.

I. Description of the Federal Action

On May 29, 2008 the Illinois Environmental Protection Agency (Illinois EPA) submitted a site-specific water quality standard (WQS) for Total Dissolved Solids (TDS) for the Lower Des Plaines River to the United States Environmental Protection Agency (EPA) for approval. EPA received a letter from the Illinois Attorney General on [DATE] certifying that the rulemaking met all Federal and State legal requirements. This certification completed the requirements of State WQS submissions as specified in 40 CFR 131.6 and marked the official beginning of EPA’s review responsibilities under 40 CFR 131.21 and Section 303(c) of the Clean Water Act (CWA).

EPA has reviewed the submitted information and plans on approving this site-specific WQS.

Description of the Illinois WQS Submission

The proposed site-specific rulemaking was first filed with the Illinois Pollution Control Board (IPCB) by the ExxonMobil Oil Corporation (ExxonMobil) on February 7, 2006 for discharges of Total Dissolved Solids (TDS) from the ExxonMobil Joliet Refinery into the Lower Des Plaines River during the months of November through April in each year. This site-specific WQS revision was necessitated by a change in the ExxonMobil plant operations. A consent decree between ExxonMobil and EPA required the company to reduce air emissions. A Wet Gas Scrubber (WGS) was installed and while reducing the amount of sulfur emitted to the air has increased the amount of sodium sulfate in the effluent. ExxonMobil has employed a sulfur recovery system that captures some of the sulfur that would have been in the effluent, thereby reducing sulfate (and therefore TDS) as much as possible. All other treatment options are energy intensive and the Illinois EPA has concluded that there are no reasonable treatment alternatives.

ExxonMobil is seeking a site-specific standard for TDS for the Lower Des Plaines River from 1500 mg/L upstream of the I-55 bridge (This segment of the Des Plaines River is designated as Secondary Contact and Indigenous Aquatic Life) and 1000 mg/L downstream of the I-55 bridge to1686 mg/L from the point of discharge to the confluence with the Kankakee River (This segment of the Des Plaines River is designated as General Use) during the months of November through April. The standards cannot be met under winter low flow conditions because of high upstream TDS loads from road salting runoff which in itself results in TDS levels above the current WQS. The specific rule language being added to the Illinois rules is shown below:

Section 303 .445 Total Dissolved Solids Water Quality Standard for the Lower Des Plaines

a) Beginning November 1 and continuing through April 30 of each year, the total dissolved solids (TDS) water quality standard for Secondary Contact and Indigenous Aquatic Life Use waters in 35 Ill . Adm. Code 302.407 does not apply to the portion of the Des Plaines River from the ExxonMobil refinery wastewater treatment plant discharge point located at 1-55 and Arsenal Road (said point being located in Will County, T34N,R9E,S15, Latitude : 41', 25" North, Longitude : 88°, 11', 20" West) and continuing 5 bridge . TDS levels in these waters must instead meet a water quality standard for TDS (STORET Number 70300) of 1,686 mg/L .

b) Beginning November I and continuing through April 30 of each year, the TDS water quality standard for General Use Waters in 35 Ill . Adm. Code 302 .208 does not apply to the Des Plaines River from the 1-55 bridge to the confluence of the Des Plaines River with the Kankakee River . TDS

levels in these waters must instead meet a water quality standard for TDS (STORET Number 70300) of 1,686 mg/L.

Finally, the Illinois EPA consulted with the Illinois Department of Natural Resources regarding the presence of threatened or endangered species that may be affected by the proposed rule. On December 19, 2005, the Illinois DNR responded that "no threatened or endangered species or natural areas were affected."[2]

II. Action Area

The action area for this site-specific standard is as follows: a portion of the Des Plaines River from the point of discharge from the ExxonMobil refinery located at Interstate 55 and Arsenal Road (in Will County, T34N, R9E, S15, Latitude: 41°, 25', 20" North, Longitude: 88°, 11', 20" West) and continuing to the confluence with the Kankakee River in Will County. Below is an image from Google Earth showing the action area with the segment of the Des Plaines River highlighted in yellow.

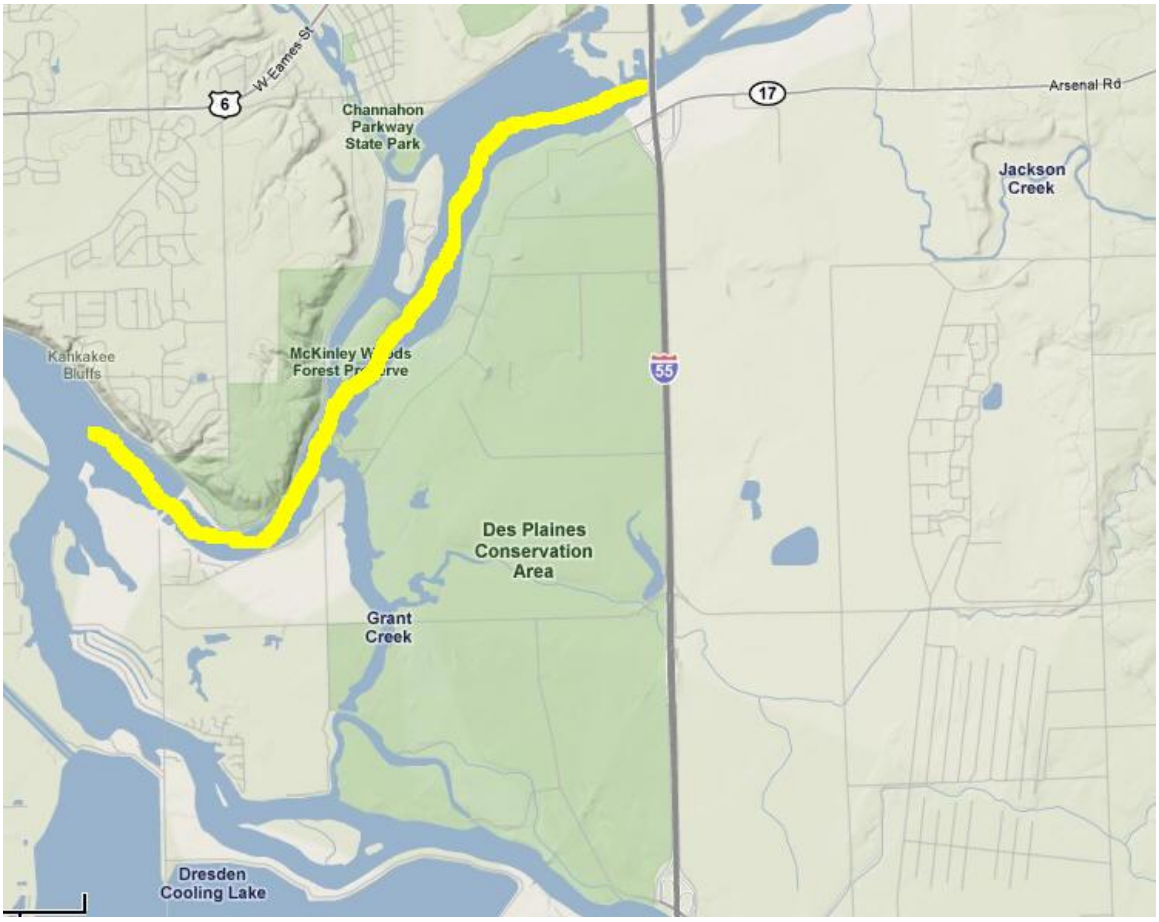

Figure 1 Action Area (highlighted in yellow), Lower Des Plaines River in Will County Illinois

2 Summary of testimony from the December 7, 2006 Illinois Pollution Control Board Opinion and Order of the Board (R06-24).

III Endangered and Threatened Species Present in the Action Area

All Species Listed for Illinois

There are currently 27 animal and 10 plant species listed as threatened or endangered by the U.S. Fish & Wildlife Service (FWS) in Illinois (http://www.fws.gov/midwest/endangered/lists/state-il.html). Federally-listed species "extant" or "near missing" in Illinois include three aquatic non-mussel species, four mussel species, and three aquatic habitat-dependent species, as indicated in a May 31, 2007 correspondence from the FWS, Rock Island Field Office. In addition, the following species should be considered in Illinois: a) one species of mussel, the fanshell (*Cyprogenia stegaria*), last found in 1984 and listed by FWS as "missing" in the state; b) one aquatic habitat-dependent bird species, the piping plover (*Charadrius melodus*), listed as "missing" in the state but for which critical habitat has been identified in Lake County, Illinois; and c) two plant species, the eastern prairie-fringed orchid (*Platanthera leucophaea*) and the decurrent false aster (*Boltonia decurrens*), wetland species whose habitat may periodically hold standing water for more than two weeks during the growing season, including as a source surface waters of the U.S. All other Federally-listed threatened or endangered species in the correspondence from FWS were described as "missing," "unsuccessful relocations," "extirpated," or "extinct," and thus are not included in this evaluation. Of the seven listed species found in Will County (Mead's milkweed, Lakeside daisy, Leafy-prairie clover, Prairie bush clover, Eastern prairie fringed orchid, Indiana bat, and the Hine's emerald dragonfly) only the following three species meet the criteria discussed above and will therefore be considered in this Biological Evaluation:

Animals: Hine's emerald dragonfly and Indiana bat
Plants: Eastern prairie fringed orchid

Species Accounts

Indiana Bat (*Myotis sodalis*) [AQUATIC DEPENDENT]

The Indiana bat is a temperate, insectivorous, migratory bat that hibernates colonially in caves and mines in the winter. First listed as an endangered species on March 11, 1967, Indiana bats are found throughout the eastern United States, where documented declines are primarily due to human disturbance of hibernating bats, modifications to caves in which they over-winter (hibernacula), and natural hazards such as flooding (USFWS 1999a). Several additional factors are also suspected as contributing to recent population declines, including habitat loss due to changing land use practices (e.g. fire suppression, clear-cutting, habitat fragmentation and housing development), and also pesticides (USFWS 1999a; NatureServe 2006a).

The population of Indiana bats was estimated to decline from 550,000 in the early 1980s to 353,000 in the mid-1990s (NatureServe 2006a). Hibernating populations of the Indiana bat are known to occur in Illinois, including three Priority Two hibernacula (which host between 500 and 30,000 bats) reported in the recovery plan (USFWS 1999a). According to the most recent survey circa 1995-97, the estimated population of Indiana bats in the state was 4,530 which represents approximately 1.3% of the total estimated population in the United States. However, population trends in Illinois are poorly documented (USFWS 1999a). NatureServe (2006a) lists the bat as occurring in 24 Illinois counties, mostly in the southern half of the state, although it is reported to occur as far north as LaSalle County. Gardner et al. (1996) conducted a statewide survey of the summer distribution of the Indiana bat in Illinois between 1985 and 1994 and found no Indiana bats north of Henderson and Ford Counties (both of these counties are south of Will County).

In summer, Indiana bats roost in trees and forage for insects in upland and riparian forests (USFWS 1999a). Habitat associations of the Indiana bat may include small tracts of oak-hickory upland and elm-ash-cottonwood bottomland forest that exist in an agriculturally fragmented landscape (USFWS 1999a). Indiana bats feed exclusively on flying terrestrial and aquatic insects. While one study suggested that female Indiana bats in south-central Michigan may tend to favor aquatic insects (Kurta and Whitaker 1998), most studies have consistently shown that Indiana bats feed mostly on terrestrial insects (USFWS 1999a). For example, Brack and LaVal (1985) studied food habits of Indiana bats inhabiting a cave in Missouri; their data indicated that 84.5% of the male diet and 79.3% of the female diet consisted of lepidopterans, which are primarily terrestrial. Similarly, Lee and McCracken (2004) studied the food habits of Indiana bats and two other species of *Myotis* in Indiana and found Indiana bats to exhibit a strong preference for lepidoperans (moths) over other insects, and to exhibit a much more restrictive diet in this regard than the other two species. Selection of terrestrial insects over aquatic insects is related to the foraging behavior of Indiana bats; Sparks et al. (2005) conducted a study of foraging Indiana bat habitat in Indianapolis, Indiana and found that the bat preferred woodland as foraging habitat over open water.

Hine's Emerald Dragonfly (*Somatochlora hineana*) [AQUATIC]

The Hines emerald dragonfly was listed as an endangered species on January 26, 1995. This beautiful dragonfly with brilliant green eyes, dark metallic green thorax, and two lateral yellow lines inhabits marshes and sedge meadows fed by calcareous seepage (USFWS 2001). Nymphs inhabit small, shallow streamlets, and sometimes inhabit crayfish burrows or other sheltered microhabitats during cool seasons or dry periods. While adults feed on airborne insects, nymphs feed on aquatic macroinvertebrates such as oligochaetes, mayfly nymphs, and caddisfly larvae (USFWS 2001).

The full historical range of this species is unknown (USFWS 2001). The species was originally known from Ohio and Indiana, but has since been recorded in Illinois, Wisconsin, Michigan, Missouri and Alabama. The species is now believed to be extirpated from Ohio, Indiana and Alabama (NatureServe 2006b). In Illinois, populations

inhabit nine sites in Cook, DuPage and Will Counties along the lower Des Plaines River Valley; all Illinois occurrences are considered to be critically imperiled (NatureServe 2006a). Collectively, the Illinois population is also considered to be the most genetically-diverse population of the Hines emerald dragonfly (USFWS 2001), and is therefore critical to the sustainability of the species.

Habitat fragmentation and destruction appear to be the main causes of the decline of this species (USFWS 2001). Ongoing threats to extant Illinois populations include the development of industrial facilities, highway development, quarry development, nonpoint water pollution, and ATV use (NatureServe 2006b). Successional change (replacement of open wetland habitat with woody vegetation) and the disruption of ecological and hydrological processes represent additional threats to extant populations. In addition, while the impacts of poor water quality are unknown, contamination of groundwater and surface water are considered significant threats to the species due to the long aquatic (nymphal) stage of this species (USFWS 2001).

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*) [WETLAND]

The eastern prairie fringed orchid was listed as a threatened species on September 28, 1989. This large and showy orchid once occurred from Iowa, Missouri and Oklahoma eastward through southern Wisconsin, northern and central Illinois, southern Michigan, northern Indiana and Ohio, and small areas of the northeastern United States and southern Ontario. The species has dramatically declined and is extirpated from much of its historic range. Illinois, which probably contained the largest pre-settlement populations of the eastern prairie fringed orchid, has experienced the most extensive population decline of any state, declining in range from 33 counties in the northern two-thirds of the state to 20 fragmented populations in six counties (USFWS 1999b).

The eastern prairie fringed orchid occurs in a wide variety of open habitats ranging from mesic prairie to sedge meadows and marshes. Habitat destruction has been the primary reason for the dramatic decline of this species, and drainage and development are the most critical current threats to the species. Additional threats include fire suppression and woody vegetation encroachment, potential impacts to populations of the lone pollinator of this orchid, the hawkmoth, invasive plant encroachment, and over-utilization for commercial and scientific purposes (USFWS 1999b). Water quality is not listed as a threat to the remaining populations of this species.

IV. Analysis of Potential of this Action to Affected Listed Threatened and Endangered Species

Indiana bat: Although this species does feed in part on flying aquatic insects and is thus aquatic-dependent, the primary food sources of this species are terrestrial flying insects, as confirmed by several studies cited previously. In addition, the best available information on the distribution of the species in the state indicates that the Indiana bat is seldom present in the northern part of the Illinois and has not been found in Will County

(USFWS 2007). Finally, the Indiana bat hibernates during the winter months and the site-specific TDS standard is only applicable during the winter months; no change is being made during the summer months (May 1 through October 31).

Either of the above factors taken alone will suggest a minimal risk of exposure to elevated TDS concentrations in surface waters as a result of this site-specific standard. Taken together however, we determine that the site-specific TDS standard will have **no effect** on the Indiana bat population that potentially could occur in the action area.

Hine's emerald dragonfly: Due to the long aquatic (nymphal) stage of the Hines emerald's life cycle, contamination of groundwater and surface water are considered potential threats to the species (USFWS 2001). Unfortunately, not much is known regarding the effect of specific contaminants on this species including TDS (USFWS 2001).

The September 27, 2001 Recovery Plan (USFWS 2007) identified nine sites in Will, Cook and Du Page counties in Illinois where populations of the Hine's Emerald Dragonfly occur. All of these sites are within 12 miles or each other and within 2.5 miles of the Des Plaines River and all are north of Joliet and upstream of the action area. In a September 5, 2007 Federal Register notice, the U.S. FWS officially designated critical habitat for the Hine's Emerald Dragonfly. Seven specific units along the Des Plaines River were identified in Will and Cook counties. All of these areas are north of Joliet and well upstream of the action area.

Vogt and Cashatt (2007) recently conducted a survey of Illinois using various data resources to identify potential sites habitat suitable to support Hine's Emerald populations. One of these sites, Grant Creek, was identified as having great potential for supporting the Hine's Emerald largely due to its proximity to extant populations. As mentioned above, the closest known site of extant Hine's Emerald to the action area is the Lockport Prairie site near Lockport Illinois (north of Joliet). Grant Creek is a small creek that flows through the Des Plaines Conservation Area and ultimately into the Des Plaines River just east of where the Des Plaines joins the Kankakee River. Although this site is in closer proximity to the action area, it is unlikely that the revised TDS standard for the Des Plaines River would have any effect on the Grant Creek area primarily because the Des Plaines River is downstream. In addition, the revised TDS standard is still within toxicity limits for the protection of aquatic life and finally, the TDS standard is being replaced entirely from the State's WQS rules by standards for the more potentially toxic individual ions of sulfates and chlorides.

For these reasons, the revised site-specific TDS standard for the Lower Des Plaines River will have no effect on the Hines emerald dragonfly.

Eastern prairie-fringed orchid: The recovery plan (USFWS 1999b) for the eastern prairie-fringed orchid does not identify water quality as a threat to the remaining populations of the species. In addition, this species is not known to occur in the action

area. Thus, the TDS site-specific WQS will have **no effect** on the eastern prairie-fringed orchid.

V. Analysis of Cumulative Effects on Listed Species

The adoption of the TDS site-specific standard for the Lower Des Plaines River by Illinois is independent of other revisions that Illinois may make to their water quality standards. That is, Illinois is not likely to adopt new standards for other chemicals or revise existing criteria for other chemicals due to having adopted this TDS site-specific standard. Also, as mentioned above, Illinois will be deleting the existing TDS standard from their rules entirely and replacing it with the major individual components such as sulfates and chlorides. The current TDS standards will therefore not be relevant or used as a standard by which protection of the aquatic life designated use will be judged.

Since this site-specific standard applies to a given segment of the Lower Des Plaines River other existing or potential dischargers into this segment should be considered. According to the Illinois EPA, the following facilities also discharge into this segment of the Des Plaines River: the Channohon Wastewater Treatment Facilitity, BASF, the ExxonMobil tank farm, Loder Cronklaan and the Dow Chemical polystyrene plant. The Illinois EPA asserts that none of these sources discharge high levels of TDS nor indicate the need for water quality based TDS limitations. The setting of this higher TDS standard for the Lower Des Plaines River should therefore not result in additional TDS discharge from other facilities.

VI. Conclusions

This Biological Evaluation indicates that the Illinois TDS site-specific standard for the Lower Des Plaines River will have no effect on those Federally-listed aquatic or aquatic-dependent species that either currently exist or have the potential to exist in the action area, namely, the Indiana bat, the Hine's emerald dragonfly, and the Eastern prairie-fringed orchid.

VII. Literature Cited

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